

The following information is provided as an addendum to the Study R-7 – Reservoir Boating Report. This is in response to a request from the Recreation and Socioeconomics Workgroup to provide additional assessment of marina facilities, in particular as related to parking adequacy, and of floating restrooms.

Assessment of Marina Parking

Although several sources of parking guidelines for marinas are available, a wide range of variables affect boat usage and resulting parking demands, requiring site-specific assessment of parking needs. Perhaps the foremost factor is the use level the boats stored at the marina in wet slips and at moorings receive. Observations were not made of marina slip and mooring buoy occupancy at Lake Oroville, but marina industry sources and the study authors' professional experience suggest that use of marina boats is perhaps 25-30 percent on peak season weekends and 15-20 percent on weekdays. Summer holiday weekend use may be in the range of 40-60 percent. At Lake Oroville, it was observed that many house boaters used their boats at the mooring and did not leave the mooring to cruise the lake. These boaters and their guests, like those who do leave the marina, require parking spaces.

Although systematic observation was not done and it is difficult to know from sight whether moored houseboats were occupied or not, informal observations conducted in the course of other Study R-7 field work suggests that the use rates cited above generally hold true for Lake Oroville. (An average of 82 houseboats were counted out on the lake on summer weekend afternoons, about 16 percent of the approximately 500 moored. An average of 192 houseboats were counted on three summer holidays, about 38 percent of the approximately 500 moored. Some of the houseboats observed were rental units, which are not included in the mooring buoy count. However, not all boats moored or docked at the marinas are houseboats. Nearly all pontoon boats and non-powered boats--primarily sail boats--used on the lake also originate at the marinas; an average of 33 of these boats were observed on summer weekend afternoons and an average of 60 were observed on three summer holidays.)

Other factors in marina parking needs include the size of the boats in slips and moored and the size and nature of the rental fleet. At both Lake Oroville marinas, most of the boats are houseboats. Some of these are 50 feet or greater in length. The wet slips at Bidwell Canyon Marina in particular contain several dozen large cabin cruisers and sailboats. Each boat of these types can host several people at one time. The larger houseboats can host a dozen or more people, who are likely to arrive at the marina in several vehicles. Marinas with these large boats, then, will require relatively more parking per boat than if smaller boats were in the majority.

With the above factors in mind, it may be useful to compare the parking provided at the Bidwell Canyon and Lime Saddle marinas with guidelines developed from existing sources and knowledge of Lake Oroville use patterns and conditions. The table below provides the guidelines used for this assessment, and compares the parking at the Bidwell Canyon and Lime Saddle Marinas to the guidelines. This assessment applies to peak boating season conditions (Memorial Day weekend through Labor Day weekend); parking demand is much lower during most of the non-peak season.

Assessment of Marina Parking based on Guidelines.¹

	Bidwell Canyon Marina	Lime Saddle Marina ²
Guideline	0.7 spaces per slip or mooring ³	0.5 spaces per slip or mooring ⁴
Spaces Needed	680 slips/moorings = 476 spaces needed	Current: 220 slips/moorings = 110 spaces needed Future: 340 slips/moorings = 170 spaces needed (assumes 120 wet slips lost 12/02 will be replaced)
Current Parking	Parking spaces increase as the reservoir pool level decreases: <ul style="list-style-type: none"> - 168 spaces at full pool (900 ft.) in upper paved marina lot plus 30 unpaved spaces in overflow lot. - About 230 spaces at 850 ft. pool elevation (typical of mid to late summer in wet or normal years) in upper and lower paved marina lots plus 30 unpaved spaces in overflow lot. - About 300 spaces at 800 ft. pool elevation (typical of mid to late summer in dry years) in upper and lower paved marina lots plus 30 unpaved spaces in overflow lot. 	Boat ramp and marina share parking lot: <ul style="list-style-type: none"> - Have 45 vehicle spaces in main lot, 64 spaces in paved overflow lot near entrance, and additional spaces in lot above ramp (most of this lot is often occupied by ramp users' vehicles and boat trailers) - Total = approx 140 spaces if assume space for 30 vehicles will be available in overflow lot above ramp.
Conclusions⁵	<ul style="list-style-type: none"> - About 275 spaces deficient at 900 ft. pool elev. (full pool) - About 215 spaces deficient at 850 ft pool elev. - About 145 spaces deficient at 800 ft pool elev. (if elevation occurs during peak boating season) <p>* Marina boaters and guests may also park in the residential area near the Bidwell Canyon entrance and walk in.</p>	<ul style="list-style-type: none"> - Current: sufficient parking at current reduced number of slips - Future: About 30 spaces deficient when 120 slips are replaced, depending on use level of overflow lot and lot above ramp by ramp users. Will be deficient by as many as 60 spaces if little or no room for vehicles is available in lot above ramp.

1. Several parking guidelines have been published and implemented by various boating organizations. Parking space guidelines from 0.6 to 0.8 spaces per marina boat stored are most common, although one source stated 0.2 spaces per mooring (and 0.6 per wet slip) were sufficient (Tobiasson and Kollmeyer 2000; Stone 2002). The International Marina Institute (2004a) suggested that more than 0.5 spaces per slip would be excessive for most sites.
2. Assessment of Lime Saddle Marina includes a future condition, with assumption that 200 wet slips lost to December 2002 storm damage will be replaced in the near future.
3. Because the boats stored at Bidwell Canyon Marina are primarily houseboats and other large craft, and the marina maintains a sizeable rental fleet of houseboats and other large watercraft, a relatively high parking guideline of 0.7 parking spaces per slip was used in this assessment.
4. Because Lime Saddle Marina has about 70 percent fewer moorings (like at Bidwell Canyon, primarily houseboats), fewer other large boats in slips, and a smaller fleet of large rental boats, a more conservative guideline of 0.5 parking spaces per slip was used for that site.
5. These conclusions assume that marina boaters and guests will not park in vehicle/trailer spaces in the boat ramp lot at Bidwell Canyon or the shared lot at Lime Saddle, although this is commonly done and spaces may be available.

Other Marina Amenities

Bidwell Canyon Marina provides men's, women's, and handicapped accessible restrooms, and several gas pumps and pump-out stations on its main dock, in the area surrounding their marina store and office. Lime Saddle marina has a two-stall floating restroom (temporarily relocated to the marina by DPR to replace the restroom damaged by the December 2002 storm), two gas pumps, and a pump-out station. The number of these facilities needed, like parking, also depends to some degree on the level of use marina boats receive, as well as other factors. However, no published or established guidelines have been found for marina amenities such as restrooms, gas docks, and holding tank pump-out facilities. The California Department of Boating and Waterways publishes guidelines for boat ramp facilities only. The International Marina Institute (2004b) was contacted for this assessment and stated that they were not aware of any marina-specific guidelines.

Regarding restroom stalls, the number needed at the two Lake Oroville marinas may be reduced by the fact that most of the boats moored at the marinas are houseboats with on-board toilet facilities. There is also a restroom at the parking area for each marina, which boaters may use before heading to their moored boat or out on the lake. At the same time, a high number of boats with on-board toilet facilities increases the need for holding tank pump-out facilities.

The number of gas docks needed is not directly related to the size of the marina or number of moorings/slips because the gas pumps supply fuel to many non-marinas boaters as well. Although the houseboats that predominate at the marinas have high fuel needs, it has been observed that relatively few boats leave their moorings, even on summer weekends. Also, many houseboats that were observed away from the marina were beached or moored in nearby coves, which required only a few minutes cruising time to reach from the marina mooring field. Both of these factors would reduce overall fuel demand.

Assessment of Floating Restrooms

DPR maintains seven floating restrooms distributed across the length of Lake Oroville. Two of the restrooms are anchored in the main basin at the south end of the lake and each arm of the lake has a single restroom anchored out of the flow of boat traffic in a cove. Each restroom has two unisex stalls and room for several boats to tie up alongside while boaters use the facility. The greater convenience over land based restrooms makes the facilities popular with boaters. Nevertheless, observations indicate that boaters typically do not have to wait to use the restrooms, even during summer weekend afternoons and holidays peak use times. Some boaters are interested in having more floating restrooms installed to reduce the distance between facilities and further enhance convenience.

DPR crews pump out the floating restroom holding tanks weekly most of the year, and every two weeks during the winter when boating activity is lowest. Most of the restrooms have been retrofitted with solar powered pumps that minimize the amount of water used for flushing, thus reducing the frequency that pumping out is necessary (R. Beach, pers. comm.). The facilities were observed to be in good condition, clean, and free of objectionable odors. DPR reports no problems with the function of the floating

restrooms or any indication that the facilities are overused, such as full holding tanks or an inability to empty the holding tanks frequently enough commensurate with their use level (R. Beach, pers. comm.). Water quality testing conducted by DWR on several dates during the summer of 2003 in the vicinity of several of the floating restrooms did not detect any bacteriological contamination of the surrounding waters (Boullion 2003).

Sources

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